

An Argument for an Ethnicity and Recreation Model via Confirmatory
Factor Analysis and Path Analysis Measures

By

Edwin Gomez, Ph.D.

Assistant Professor
Old Dominion University
Recreation and Leisure Studies Program
140 HPE Building
Norfolk, VA 23528

Phone: 757/683-6309
Email: egomez@odu.edu

An Argument for an Ethnicity and Recreation Model via Confirmatory Factor Analysis and Path Analysis Measures

At the request of academic colleagues and practitioners from the United States Army Corps of Engineers, the researcher put together this synopsis of the Ethnicity and Public Recreation Participation Model (EPRP Model), a product of his dissertation research, for three reasons. First, the researcher wanted to introduce the EPRP Model as an explanatory/causal model that coincides with the Corp's continued research initiative on ethnicity and recreation, specifically as it relates to Latinos (Hispanics). Second, this report offers a non-technical approach to looking at how the model and modeling works. In other words, you don't have to know the statistics behind the model, to understand it. Third, this report mentions theoretical, practical, and managerial implications as a result of the findings from the development of the model, and consequent development of the relationships between different concepts considered in previous studies.

What this report is not

I wanted to include this section because I believe it is necessary to inform the reader what the report is not. The report is not a literature review. The assumption is that the reader has some knowledge of recreation and ethnic studies. Publications by the researcher and several colleagues illustrate this development and critique of the literature, as well as general reviews (Allison, 1988; Dwyer & Gobster, 1992; Gramman, 1996; Gomez, 1999; Hutchison, 1988; Johnson, Bowker, English & Worthen, 1997), and it is not the purpose of this report.

There have been several variables which have been considered an impact on ethnicity and recreation (see Table 1). The model is not a panacea for ethnicity and recreation. Not all variables (see Table 1) which have been studied are included in the report. For example, there is no mention of gender, life-cycle, distance to the park as constructs in the model. However, these concepts can be incorporated into the model quite easily as mediator variables. The reasons for the exclusion of them and others from the model has to do with the nature of the scale of measurement needed for causal modeling. This is beyond the scope of this report.

Lastly the report does seeks to advance how we look at relationships between variables and conceptualize phenomena. It is not meant to be a "course" in path analysis. To truly understand the "nuts and bolts" of confirmatory factor analysis and path analysis, one has to understand structural equation modeling, communalities, matrix algebra, and an inherent understanding of validity and reliability. The researcher was specifically asked to "provide an explanation of the pathway analysis that an intelligent non-statistician could comprehend."

To this end, the researcher has tried to keep the statistical jargon to a minimum. However, the reader must also realize that the nature of the model is statistical, and that the researcher will refer to it when needed. Having said this, an argument for the model itself is needed.

Table 1

Concepts/Variables Addressed in the Literature Regarding Ethnicity/Race and Public Recreation Participation

Concepts/Variables	Researchers (Year) (Approach to Concept)
Marginality	Klobus-Edwards (1981) Stamps & Stamps (1985) Woodard (1988) (classism) West (1989) Taylor (1992) Floyd, et al. (1994) (subjective)
Race/Ethnicity	Klobus-Edwards (1981) Stamps & Stamps (1985) Hutchison (1987) West (1989) Taylor (1992) (ethnic identification) Carr & Williams (1993) (3 dimensions of ethnicity) Chavez (1993) Floyd, et al. (1993) (ethnic identification) Floyd, et al. (1994) (race)
Sex/Gender	Edwards (1981) Woodard (1989) Taylor (1992)
Residency	Edwards (1981) (black or mixed neighborhoods) West (1989) (spatial regional context) Taylor (1992) (time living in city)
Age	Woodard (1988) Chavez (1993) Floyd, et al. (1993)
Discrimination	Woodard (1988) West (1989) Chavez (1993)

An Argument for a Model on Ethnicity and Recreation

Over the past 30 years, the ethnicity and recreation literature has been fragmented due to inconsistencies of measurement, reproduction, and operationalization. A model provides a foundation - a base from which to spring from. Models are meant to synthesize and organize theoretical development of a phenomenon. Few models exist in the recreation and ethnicity literature. And those that do exist fall under three categories, they are: (1) not explicitly mentioned, (2) not explicitly tested, or (3) lack power because concepts/constructs in the models are unidimensional (there is only one item or indicator trying to get at a phenomenon under study).

The most serious of the three is the latter. In psychometrics, the area of social science concerned with building scales, it is common practice to mention more than one item/question at a study to get at a phenomenon. The reasons for this are statistical and logical. From a statistical point of view, the greater the amount of indicators of a concept one wants to study, the greater the power one has for explanation. From a logical point of view consider the following example of verbal ability.

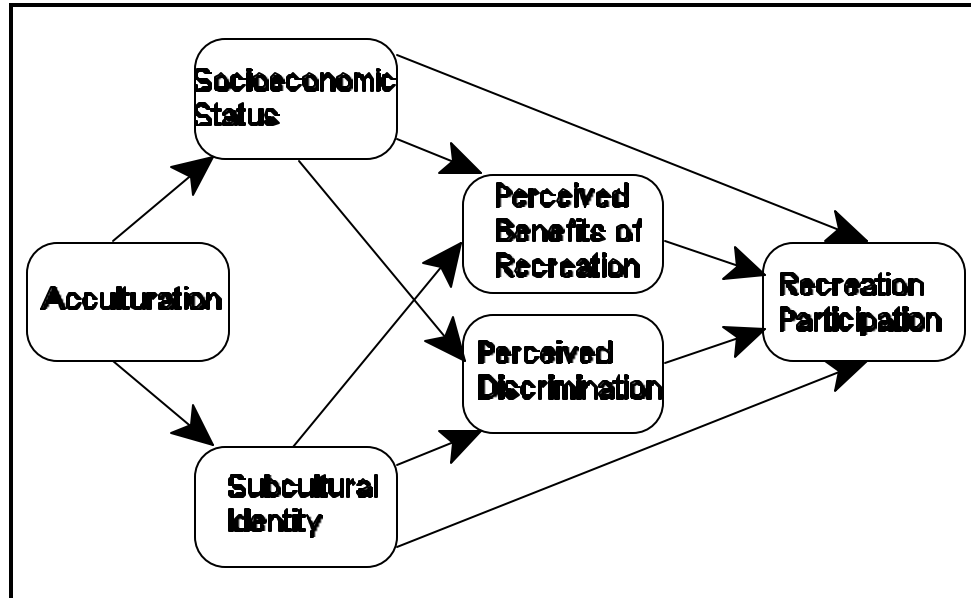
Think about verbal ability. One of the things that one might see on the verbal ability test are some vocabulary words. What does the word hegemony mean? How many people know what hegemony means? It means the extent of power that one nation has. Okay, now where does one find that out? Political science class. So, one could be an English major, never had exposure to this word, but his/her vocabulary is quite extensive. Yet, with this one indicator, they are deemed low in verbal aptitude. This is the basic "gist" behind creating constructs in a model. One needs to have multiple indicator of a construct to validly capture that construct. More complex measures and approaches, then, are needed that can both be modeled and applied to the real world.

The last comment the researcher wants to make is that when one creates a model from theory, it lends itself to better statistical results. Often times, researchers make questions, crunch the numbers, and infer causality from those numbers. With a model/construct approach, you begin with a measurement or causal model first, (discussed more fully later), based on research and theory, and then test to see whether ones thinking is correct. In other words theory, research, or logic should drive the statistics one runs, statistics should not derive the theory.

The Ethnicity and Public Recreation Participation Model

The researcher sought to create a model which identifies major concepts, and considers how these concepts are (inter)related. Figure 1 illustrates the relationships between the following factors: Acculturation (ACC), Socioeconomic status (SES), Subcultural identity (SID), Benefits of Recreation (BEN), Perceived Discrimination (DIS), and Recreation Participation (REC).

Figure 1. The Ethnicity and Public Recreation Participation Model



The Ethnicity and Public Recreation Participation Model (EPRPM) illustrates several of the components reviewed in the literature. The EPRPM is a causal model. It reflects the literature's support of these concepts and how each concept relates to others. It is important to understand the order of causation. Davis (1985) supplies some rules concerning the logic of causal order (for two variables X and Y, distinguish among three possibilities):

- (1) $X \div Y$, X might influence Y but Y does not influence X.
- (2) $X \overset{W}{\longleftrightarrow} Y$, X and Y might influence each other.
- (3) $X \oslash Y$, X and Y might correlate highly, but we do not know directionality (p. 10).

There are three important things to remember. First, the directions of the arrows in a causal model indicate "potential" flows of causation, not necessarily actual flows. Second, the most important principle of causal order is that "*after cannot cause before ...* there is no way to change the past ... one way arrows flow with time" (Davis, 1985, p. 11).

The last thing to remember about causality is the following:

... most methodologists agree that causal order is a substantive or empirical problem to be solved by our knowledge about how the real world works, not by statistical gyrations. At the philosophical level this has positive and negative implications. On the negative side, empirical research is always hostage to empirical assumptions that might be wrong; on the positive side, computers cannot substitute for sociologists in analyzing data, because

computers do not know anything about the real world and sociologists do know a little bit (Davis, 1985, p. 11).

Given this insight into the development of causal relationships, one can now consider Figure 1 in its entirety.

Acculturation is believed to measure one's level of assimilation into the dominant culture. The causal arrows extend to both socioeconomic status and subcultural identification. The underlying assumption is that acculturation begins when one is born and the level of assimilation changes over time.

Acculturation differs slightly from Floyd, et al.'s (1993) conception. Rather than occurring simultaneously with socioeconomic variables and subcultural identification, it is conceptualized, in the current study, as a precursor to SES and SID.

The stronger one's level of acculturation (cultural distance) the stronger one will identify with a majority culture. Conversely, if one's level of acculturation is weak, then the socioeconomic status will be lower. For example, if one speaks fluent English, the prospect of a better paying job will be increased. This causal relationship reflects acculturation theory.

Following the arrows, one can see a direct relationship between socioeconomic status and recreation participation. This relationship is hypothesized by the literature. It reflects the marginality theory. The arrow from subcultural identity to recreation behavior reflects the ethnicity theory.

Both socioeconomic status and subcultural identity have two intervening constructs which are perceived discrimination and perceived recreation benefits. BEN is used as an intervening variable because it was thought that the perceived benefits of a recreation activity or recreation site will affect actual participation in the activity or at the recreation site. The "perception of recreation benefits" construct incorporates Klobus-Edwards' (1981) suggestion of integrating "motivation for recreation participation" as a precursor to actual participation. The assumption is that motivations or perceived benefits derived from participation in a recreation activity (or going to a recreation site) is based on one's socioeconomic status and cultural perspective.

For example, there are two local parks, and one has a football game and the other has a baseball game. If you ask a Puerto Rican which he/she would prefer to go to, the odds are that he/she would pick the baseball game over the football game because football is not a national sport in Puerto Rico, and baseball is a national sport. Following the causal model, the motivation or benefit (watching baseball) of going to the park (passive recreation) is influenced by one's culture (Puerto Rican).

Conversely, if one had the economic means to attend a professional baseball game (instead of the local baseball game), or considers the attendance at a professional baseball game to give one certain social status, then socioeconomic status would affect the perception of the benefits of visiting a local baseball park. In addition, the model postulates that socioeconomic status will affect one's perception of discrimination.

The assumption here is that as one increases in socioeconomic standing, he/she may perceive less discrimination because of opportunities afforded by one's

socioeconomic status. As one's socioeconomic status increases, perceived discrimination decreases. A decrease in perceived discrimination causes an increase in recreation participation.

Perceived discrimination reflects the use of West's (1989) discrimination perspective. It is affected by one's subcultural identity. The stronger one considers him/herself a member of a subcultural group, he/she will have a stronger perception of discrimination. This then affects recreation behavior because the perception of discrimination may act as a deterrent to participation in recreation activities or sites.

Table 2 summarizes the direct and indirect influences of the different concepts on recreation behavior. The only effect not shown in Table 2 is the relationship between SES and SID. In the literature, there is no support as to which construct influences the other. There is support for showing that there is a relationship, and that this relationship is spurious. *The model illustrates that SES and SID have a common antecedent: ACC, which drives both of them, thereby making SES and SID spuriously related by definition.* Note that gender and life-cycle stage is not included in the model. This is due to the nature of how constructs in a path analysis are derived (explained later). There is a way to incorporate dichotomous and categorical variables into the model, as mediators between the constructs, but it is beyond the scope of this report.

Table 2

Direct and Indirect Effects of Ethnicity Constructs on Recreation Participation

Constructs	Direct Effects	Indirect Effects
ACC	ACC \rightarrow SES ACC \rightarrow SID	ACC \rightarrow SES \rightarrow REC ACC \rightarrow SES \rightarrow BEN \rightarrow REC ACC \rightarrow SES \rightarrow DIS \rightarrow REC ACC \rightarrow SID \rightarrow DIS \rightarrow REC ACC \rightarrow SID \rightarrow BEN \rightarrow REC ACC \rightarrow SID \rightarrow REC
SES	SES \rightarrow REC	SES \rightarrow BEN \rightarrow REC SES \rightarrow DIS \rightarrow REC
SID	SID \rightarrow REC	SID \rightarrow BEN \rightarrow REC SID \rightarrow DIS \rightarrow REC
BEN	BEN \rightarrow REC	None
DIS	DIS \rightarrow REC	None

Conceptually, one can see that there are both direct and indirect effects that influence recreation behavior. The EPRPM exemplifies a multiple causation model. The indirect effects and direct effects combine to provide a more comprehensive picture of the relationships and interrelationships of the different concepts mentioned in the literature regarding ethnicity and recreation behavior.

The EPRPM reconceptualizes the previous research by offering an alternative framework. This framework is much more involved than the traditional marginality-ethnicity framework and incorporates other factors identified as critical in the assessment of ethnic groups and recreation behavior.

Subjects and Sampling Frame

The EPRP Model was tested in the field. Access to an ethnic group population was needed to empirically test the different theoretical constructs. The ethnic group members selected were Puerto Rican. This ethnic group has not been researched in previous ethnic recreation studies. Because of the relationship between the United States (US) and Puerto Rico, Puerto Ricans provide researchers with an opportunity to look at acculturation processes, perceived discrimination, socioeconomic factors, issues regarding cultural identity, and a unique perspective on their perceptions of parks.

Puerto Ricans are part of the growing Latino population. It was important to consider a Latino group for three reasons. First, from a demographic standpoint, Latinos will be the largest ethnic group in this millennium. Second, previous research regarding ethnicity and recreation has focused primarily on African Americans. Third, the researcher needed to have access to the ethnic group members. Because the researcher is Puerto Rican, and a native of the study area, the researcher had access to the population, and an understanding of the population and its cultural nuances to facilitate participation in the study.

Geographic profile. This study was conducted in Southbridge, Massachusetts. Southbridge is located in Worcester County - south-central Massachusetts (MA), and borders northern Connecticut. The city is hilly, particularly in the northern and southern part of the city. The central part of the city is in a valley. Southbridge is approximately 60 miles west of Boston, MA. All parks are located approximately within one mile of the downtown area.

Demographic profile. According to the 1990 Census, Southbridge's population was 17,816. The median household income for Southbridge residents is \$27, 834. Puerto Ricans constitute the largest ethnic group in Southbridge. Puerto Ricans represent 12% (2,109) of the city's population, and 91% of the city's Hispanic population. Over half of the Puerto Rican population (56%) was born in Puerto Rico. Spanish is spoken in nearly 10% of the entire population, and by about 75% of all Hispanics (United States Census, 1990).

A total of 384 usable surveys were collected. Questionnaire design and collection methods will not be discussed in this report, as it is not relevant to the model. However, distribution and collection is instructive for those doing research with Latino groups, and can be obtained by contacting the researcher.

An Explanation of the Model: Confirmatory Factor Analysis and Path Analysis

In general, a path analysis is made up of constructs in a causal chain (see Table 2). Each construct is made up of items which are typically the questions you ask the respondent (see Table 3). These items assumed an interval scale, Likert Scale, from 1 to 5, with 1 being "Strongly Disagree" and 5 being "Strongly Agree".

Table 3
Items Used for each Construct

Construct	Item ^{a b}
Perceived Benefits	1. Enjoy nature at parks. 2. Parks allow me to escape. 3. Parks allow me to socialize/create contacts. 4. Parks allow me to exercise. 5. Parks allow me to be with family/friends. 6. Parks have a lot of open space. 7. Parks are a place for kids to go.
Acculturation	8. Language at home. 9. Language for radio/television. 10. Language for magazines/papers. 11. Language for music. 12. Language with close friends. 13. Language at parties. 14. Language when visiting others. 15. Celebrate P.R. holidays. 16. Raise child with P.R. values. 17. Maintain Spanish language. 18. Maintain P.R. values in life. 19. P.R.s are not welcomed.
Perceived Discrimination	20. Police harassment. 21. Non-P.R.s make me feel uncomfortable. 22. Excluded because P.R. 23. Look downed upon because of P.R. culture.
Subcultural Identity	24. P.R. first, rather than American. 25. Prefer to be with P.R.s than with Americans. 26. P.R. culture different from American. 27. Identify with other P.R.s. 28. Prefer to display P.R. flag.
Public Recreation	29. Morris St Park 30. West St Field 31. Henry St Park 32. Westville Dam Rec Area 33. Harry J. McMahon Field
Socio-economic Status	34. Educational Status 35. Occupation Score

^a - Shaded items used in the final confirmatory factor analysis.

^b - Shaded items passed tests for internal consistency and parallelism.

Overview of the process. There are two parts to testing the EPRP Model: (1) the confirmatory factor analysis, and (2) the path analysis. I will deal with each in turn. The purpose of this section is to provide the reader with an understanding of general confirmatory factor analysis concepts, and consequent path analysis. It is meant to be a conceptual overview, and as such, the mathematics will not be illustrated, except where needed to illustrate a point. The researcher's primary concern is with measurement. The researcher has an idea of what constructs are to be measured, and this is the basis for the theoretical model. Theory indicates which constructs to measure. The process, then, involves several steps.

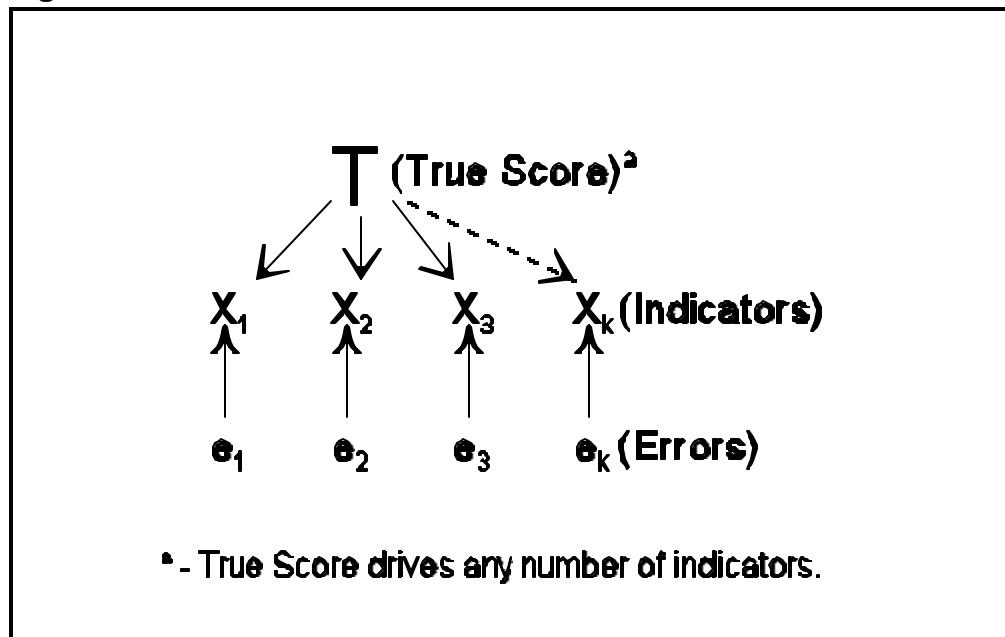
Before subjecting the data to analysis, a multiple factor measurement model was established from the literature (see Figure 1 and Section 3). This is the first step. The indicators used for each of the theoretical constructs in the model were used on the basis of face validity. If the variables/items do not meet face validity then it is unreasonable to expect the constructs to pass tests of internal consistency and parallelism.

The second step is to test the internal consistency for all constructs that have four or more indicators (more on this later). The third step is to test for parallelism for all sets of indicators. In an example of three factors, T, U, and V, one can test the indicators of T with respect to U and V, one can test the indicators of U with respect to T and V, and one can test the indicators of V with respect to T and U (more on this later).

Discard indicators that do not comply with the internal consistency theorem, or the parallelism theorem, or both. Repeat steps two and three again, until a set of indicators that meet these three criteria have been developed. And when the set of indicators pass those tests, then and only then does it make sense to test the theoretical model in a path analysis. Implicit in these steps is an understanding of the measurement model (from the literature or experience) underlying the confirmatory factor analysis.

The measurement model. In Figure 2, the underlying construct is called True Score, usually abbreviated T. The word "True" in True Score is used in the sense that it is a faithful representation of a construct. This is often referred to as a latent or unmeasured variable (Loehlin, 1987). The measurement model states that True Score drives various indicators (which are the X's) and each one of those indicators is an imperfect indicator, that is, there is some error associated with it. This model assumes a linear scaling model.

Figure 2. One Factor Measurement Model



If X_1 were a perfect indicator, the correlation between True Score and X_1 would be 1.0. The extent to which this correlation (between item and True Score) is not 1.0, there is error. This is known as error of measurement. It is random response error. Random response error is some sort of non-systematic perturbation that affects the response. It keeps the correlation between item and True Score from being 1.0 (Frank J. Boster, personal communication, March 2, 1999).

According to the classical theory of errors, if the (scaling) measurement model is correct, any observed score (any X) has two components: it is affected by True Score and it is affected by error ($x = T + e$). For example, there are two reasons for a respondent to check “agree” on an acculturation item. One is his/her level of acculturation. The second is how much measurement error there is associated with that item. These two things determine where the check mark went on that item.

The error is defined by whatever is not defined by True Score. The relationship between the indicator and True Score have a name. They are called factor loadings or parameters. The first step in a CFA is to estimate the parameters.

Estimating Parameters in a Measurement Model: The Centroid Method. Program CFA was the software program used for the CFA portion of this study. Program CFA was initially developed by John E. Hunter at Michigan State University’s Department of Psychology (April 20, 1985), and was revised by Hunter and Mark A. Hamilton of the Department of Communication at the University of Connecticut (May 11, 1992). Program CFA is a least squares, oblique multiple groups program that performs confirmatory factor analysis. It uses the Centroid Method to estimate the parameters (factor loadings) for the

measurement model. Factors are defined using communalities so that the factors are the actual constructs; i.e. **defined without error of measurement**.

Hunter's Program CFA iterates three times using the Centroid Method. The factor solution stabilizes using communalities (item reliabilities) in the correlation matrix diagonal instead of ones in the diagonal. **The use of communalities in the diagonal corrects for attenuated correlations due to measurement error by not assuming perfect reliability** (i.e., an item correlating with itself perfectly) (Hunter & Gerbing, 1982). From a statistical point of view this is the POWER behind using the CFA approach to modeling. In other words, one does NOT want to assume perfect reliability because one does not have perfect items.

Internal Consistency Theorem. The internal consistency theorem is employed to test the validity of the model. The internal consistency theorem states that the correlation between any two indicators of the same underlying True Score is the product of the correlations with True Score:

$$\underline{r_{ij} = r_{iT} r_{jT}} \quad (1)$$

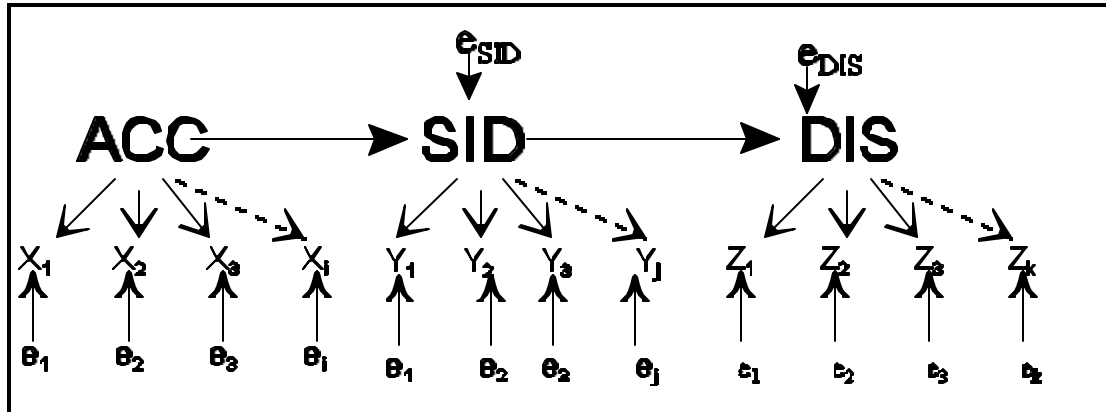
The relationships that one observes in the model are all

spurious because they are driven by their common cause: T. This model, a partial correlation model, predicts the correlation between the two variables that are related spuriously (X_1 & X_2) as the product of their correlations with their cause. So, the X_1/X_2 correlation should be, if the model is correct, equal to $r_{X_1T} * r_{X_2T}$.

Another way of saying this is that any two items (x_{ij}) should be correlated so that the correlation is equal to the product of the factor loadings. If the theorem fails, it suggests that "i" and "j" are not indicators of the same underlying factor, and to sum them would be a case of invalid measurement. Summation of the indicators can only occur if in fact this theorem held.

Multi-factor Model. Figure 3 illustrates a causal string with three constructs: ACC, SID, and DIS. There are three measurement models, one for each construct. There is error in predicting SID and error in predicting DIS. For ACC, the indicators/items are the x's (see Table 3), and the errors associated with those indicators. For SID, the indicators are y's, and the errors associated with those indicators. For DIS, the indicators are z's and their errors.

Figure 3. Multi-Factor Measurement Model



The multi-factor model is an extension of the one factor model. In the multi-factor model case, there are more than one factor, and it is necessary to test the internal consistency theorem for each of the constructs (ACC, SID, DIS). But the multi-factor model also makes predictions about the indicators of the different factors. This prediction is derived from the parallelism theory.

Parallelism Theorem. The parallelism theorem states that the correlation between ultimate indicators of different factors (e.g., X's are indicators of T, and Y's are indicators of U) would be the triple product of the correlation of X with its True Score T (its factor loading) and Y with its True Score U (its factor loading) times the correlation between the two true scores:

$$r_{xy} = r_{xACC} r_{ySID} r_{ACC/SID} \quad (2)$$

In a multi-factor model, a parallelism test is conducted for each pair of factors. That is to say, one can test the indicators of one factor and test if they are parallel with respect to indicators of another factor. If the items are parallel, this is further indication that the items measures their respective construct, and not any other construct. Another name for parallelism is external consistency.

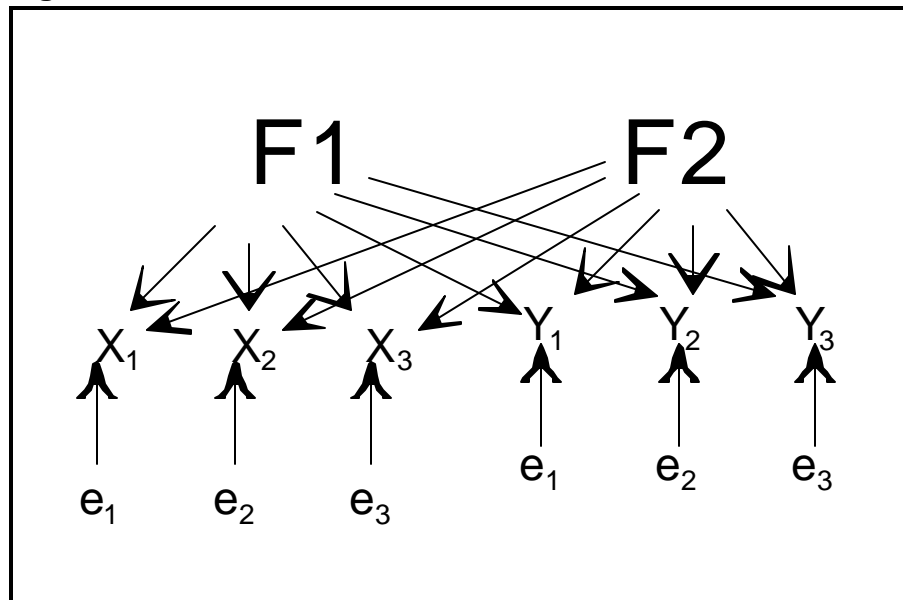
By testing parallelism, a more rigorous test of the content validity of ones measures is achieved. The test of parallelism is a more stringent test than internal consistency. It is important to impress upon the reader that a lot of the invalidity of an item does not show up until the parallelism test. This test is often never performed, or never reported in studies. If an item correlates higher with another factor than its own, then regardless of whether it is internally consistent, it is an invalid indicator because it correlates higher on another construct.

It is critical that the indicators are ultimate measures of the same factor/construct because if they are not, they should not be summed and correlated. If items pass both the internal consistency and parallelism tests, then it makes sense to sum the items. The factor/construct consisting of the summed items is correlated with the other constructs (factor correlation matrix). These are the correlations (corrected for attenuation) used in the path analysis.

Confirmatory Versus Exploratory Factor Analysis. It is important to digress a little to inform the reader about a distinction between a CFA and an exploratory factor analysis (EFA). CFA begins with a measurement model. It states that certain indicators, and only certain indicators, are indicators of a specific factor, and the other indicators are indicators of another specific factor. In an EFA model, every indicator is driven by every factor (see Figure 4). Fundamentally, this is a major difference concerning how a factor is defined. Conceptually, in terms of partial correlations, in the CFA model, the correlation between x_1 and x_2 , controlling for ACC, should equal 0 (because it's driven by a common cause). In a CFA, the y_1/y_2 correlation would also be zero when controlling for SID, and so on. But when x and y are correlated, the correlation will not be zero. A CFA is reflective of Tyson and Bailey's (1970) clustering approach to non-orthogonal solutions.

In an EFA, the correlation between x 's and y 's will be zero. With EFA, you correlate any x with any y and control for all factors ($F_1, F_2, F_3...F_k$). The partial correlation between the items, controlling for all the factors is zero. It is necessary to control for all factors in an EFA. If, for example, there were six indicators and two factors, the math would imply the model presented in Figure 4. Each factor is a linear combination of all the indicators, not just those that are said to be indicators of that factor.

Figure 4. EFA Model



In CFA, a factor was defined as true score. True score (an estimate) is defined as the sum of all its indicators that were valid measures of it. Theory guides the analysis. But, in an EFA, factors are summary variables. **These summary variables are created in a non-theoretical fashion. There is no measurement model with which to start.** Statistically speaking, these variables, in fact, are created to summarize all of the information in the correlation matrix. CFA starts with a model that makes substantive sense, and tests the notion that each set of indicators is driven by only one factor. Kline (1994) suggests that “many psychologists believe that confirmatory factor analysis is in principle a superior method to exploratory factor analysis because it tests hypotheses, which is fundamental to the scientific method” (p. 80). Unfortunately, researchers in leisure research use the EFA approach, i.e., come up with items, run them in an EFA, and then label the factors according to high factor loadings. Again, the theoretical model does not drive the analysis.

Path Analysis Concepts

The hard work is completed. In the path analysis, the constructs are now considered (composite) variables in the EPRP Model. Program Path is the software program which was used to perform the statistics for the path analysis. It was initially developed by Hunter (May 3, 1984) and revised by Hunter and Hamilton (August 17, 1997). The main input for Program Path is the correlation matrix (taken from Program CFA) and the specification of the path model. From this, Program Path’s main output is the path analysis itself which gives the original correlation matrix, the reproduced correlation matrix, the error matrix and the chi square and p-value.

Path analysis is based on a set of structural equations. The precise mathematics behind path analysis will not be discussed here. For a more comprehensive explanation of the mathematics behind causal models, see Duncan (1975), Heise (1975), Kenny (1979), Kline (1998), and Loehlin (1987). It is important, however, to have a basic understanding of the concepts involved with path analysis in order to understand this section and the interpretation of the Program Path output.

Path models use standardized data. Therefore, the path coefficients are equivalent to regression coefficients. The path model is a null hypothesis. What one is testing is that the data are consistent with the model, i.e., the errors associated with the model are equal to zero.

Over-identification status. In order to evaluate the model, one has to estimate the parameters (path coefficients) and assess the fit of the model. To estimate the parameters, the model must be over-identified. The identification status of the model refers to the amount of information that one has in the data set relative to the amount of information one has to estimate the parameters. A model is over-identified when the number of correlations exceed the number of parameters one has to estimate. Simply put, subtract the number of paths in the model from the number of total possible correlations and that is the identification status.

Total number of possible correlations between variables is derived by
using the following formula:

$$\frac{k^2 - k}{2} \quad (3)$$

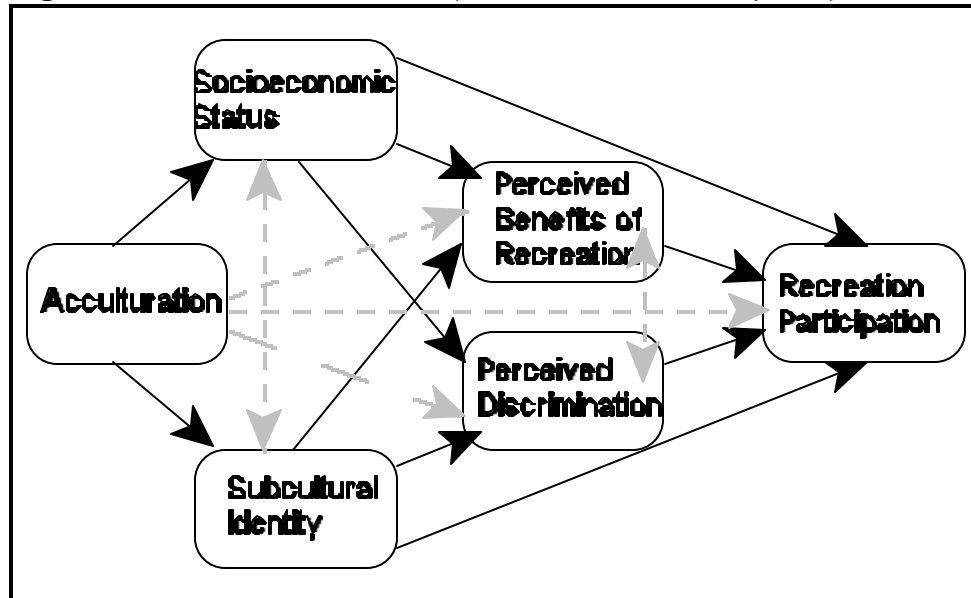
Where “k” is equal to the number of variables in the model. In the case of the proposed EPRP Model, there are six variables. Using the formula, there are 15 correlations to estimate.

Next, one looks at the number of arrows (paths) in the model. There are 10 paths. The number of paths is the number of correlations that are constrained (used up in estimating the path coefficients) to equal their obtained value by definition. Where ever there is a direct effect postulated, that correlation is used for estimating the parameters.

The remaining five correlations ($r_{\text{ACC/BEN}}$, $r_{\text{ACC/DIS}}$, $r_{\text{ACC/REC}}$, $r_{\text{SID/SES}}$, and $r_{\text{BEN/DIS}}$) are not used up in estimating the parameters (see Figure 5). Their predicted value is NOT constrained to equal their obtained value. These five parameters are what one has to estimate. These are the correlations that are to be tested to assess the fit of the model, i.e., it leaves five degrees of freedom which can be used to test the fit of the model. If the model fits, the observed minus the predicted value (errors) should be equal to zero.

Visualizing the correlation matrix. As one adds variables to a causal string, the correlation between the first variable in the causal string and the last variable will get progressively smaller as a result of the product rule. The relevance of this is that if one orders the variables in the correlation matrix according to their causal order, the correlations should decrease as they leave the diagonal of the matrix. This is a diagnostic tool for assessing errors and evaluating the logic of the model and its resultant fit.

Figure 5. The EPRP Model (with non-constrained paths)



Local versus global test. The five non-constrained correlations are the basis for local tests of the model. Program Path calls the local tests the individual link analysis. This

is the test that examines whether the errors for each non-constrained link is within sampling error of zero. The error obtained for each local test, divided by the standard error of the difference is distributed as a z-value. One then uses the z test to examine the hypothesis that the errors are within sampling error of zero.

If the z-value is less than -1.96, or greater than 1.96, then it is a large error at the .05 level. It is statistically significant at .05 (it should not be statistically significant, i.e., not statistically different from zero). If z is not as low as -1.96 or higher than 1.96, then the error is not statistically different from .05. This is the z test and it is performed for each of the five links, giving us five different standard errors. Program Path computes each of these standard errors.

The global test is the test of the model as a whole. The global test is distributed as a chi square. Chi square by definition is the distribution that is the sum of squared normal deviates. In this case, there are five normal deviates (five z-values). Program Path squares each of the five z-values and adds them up, yielding a chi square with five degrees of freedom. The chi square should not be statistically significant, if the model is to fit.

The importance of the local and global tests is that, if the model does not fit the data, the tests allow one to see where the model failed. The model as a whole could work because the chi square is a summed value, but perhaps one or more of the links are faulty. It is possible to have no errors on four of the links and have a huge error on one link. The global test would not pick this up¹.

Correlations and path coefficients. The final concept that one should understand for path analysis is the difference between a correlation and a path coefficient. The correlations between constructs include direct, indirect and spurious relationships. The path coefficient, however, is the measure of direct effects only. The path coefficients control for indirect and spurious effects.

The Final Revised Model

Substantively speaking, there is not much difference between the proposed EPRP Model (Figure 1) and the final revised EPRP Model (Figure 6). They both hypothesize a similar array of relationships. The major difference is that in the initial EPRP Model, some relationships which were considered direct, were in fact indirect or spurious, and some relationships which were conceived as indirect were in fact direct. Figure 6 illustrates the revised version of the EPRP Model as a result of the initial path analysis. The major differences between the initially proposed model and the revised model are from three variables: ACC, SES, and SID.

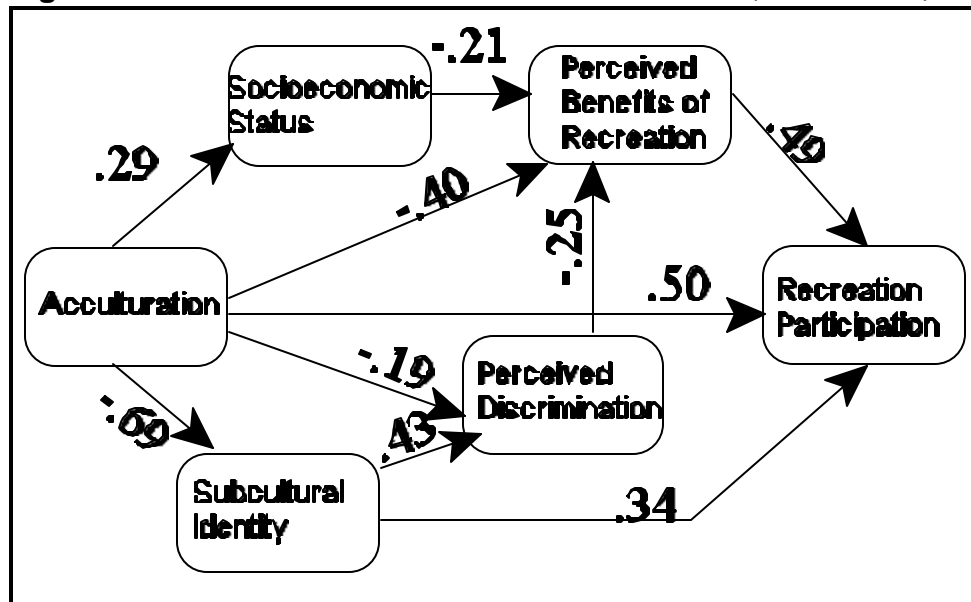
1

This is the advantage of Program Path over LISREL. LISREL does not give the local tests, it only gives the global test. It also does not give a significance test using corrected coefficients. Using uncorrected correlations, the model fails every time (Frank J. Boster, personal communication, February 9, 1999). LISREL uses maximum likelihood estimation, while Program Path uses ordinary least squares. Although maximum likelihood is a more efficient estimate, it spreads the error across the correlation matrix. As a result, one can never figure out where one went wrong. Ordinary least squares localizes the error. It is important to look at both the local and global tests to see where the model could be improved. The most important step is to diagnose the errors. The significance test is a simple decision rule, but the errors are what really matter.

In the revised model, ACC has a direct effect on both BEN, DIS, and REC. This relationship was indirect and spurious in the original model. In addition, the causal arrows between SID/BEN and between SES/BEN were omitted. The revised model hypothesizes an indirect relationship between SES and REC, rather than direct, as originally hypothesized. Lastly, the revised model introduces a new relationship between DIS and BEN. They are hypothesized to be directly and spuriously related.

The final revised model hypothesizes acculturation to be the direct antecedent, or driving force, behind the other constructs which are hypothesized in the literature as having an effect on recreation participation by ethnic group members. The extent to which one is acculturated has an impact on one's socioeconomic standing, subcultural identity, perception of discrimination, and one's perception of the benefits of parks, and actual recreation participation in the parks. The implications of this will be discussed later. This revised model must also be subjected to a path analysis to see if it is consistent with the data.

Figure 7. The EPRP Model with Path Coefficients(final version)



Interpretation of the Model. Figure 6 also represents the path coefficients in the model. The reader should keep in mind that in a standardized linear one-predictor case, the parameter estimate or path coefficient (beta weight) is the correlation. The indirect and spurious paths, however, also have to be taken into account when assessing the full impact that one construct can have on another. As an example, the direct relationship between ACC and DIS is -.19. However, DIS has an indirect relationship between ACC via SID of $(-.69 \times .43) = -.29$. The total effect of ACC on DIS is $(-.19 + -.29) = -.48$.

This process (statistical procedure) of path analysis can be considered as a series of regressions in which each variable in the model is considered in turn as a dependent

variable to be predicted from its causal antecedent variables. The path coefficients are equal to standardized regression coefficients (beta weights). Therefore, the relative influence one variable (construct) has over another variable in the model can be compared. Having mentioned that, the hypotheses can be examined.

Examination of Hypotheses

Hypotheses

1. Subcultural identity [SID] and socioeconomic status [SES] are significant predictors of public recreation participation [REC]. Subcultural identity will be a stronger predictor of park use than socioeconomic status.
2. There is a significant relationship between perceived discrimination [DIS] and public recreation participation, and perceived benefits of recreation [BEN] and public recreation participation.
3. There is a significant relationship between the subcultural identity factor [SID] and socioeconomic status [SES].
4. There is a significant negative relationship between acculturation [ACC] and subcultural identity. There is a significant positive relationship between acculturation and socioeconomic status.
5. There is a positive relationship between subcultural identity and perceived discrimination.
6. There is a negative relationship between perceived discrimination [DIS] and public recreation participation [REC].
7. The path model hypothesis:
 H_0 : the data are consistent with the model (Error = 0).
 H_1 : the data are inconsistent with the model (Error ...0).

Subcultural identity and socioeconomic status on public recreation usage. SID and SES are significant predictors of park use (REC). Subcultural identity was hypothesized as a stronger predictor of park use than socioeconomic status. Looking at Figure 6, one can see that the correlation for SES/REC via BEN is $(-.21 * .49) = -.10$, and the correlation for SID/REC is the correlation via DIS and BEN and the direct relationship between SID and REC: $[(.43 * -.25 * .49) + (.34)] = -.29$. The hypotheses are supported. Subcultural identity and socioeconomic status are significant predictors, and subcultural identity is the stronger predictor.

Perceived discrimination and perceived benefits on park use. There is a significant relationship between perceived discrimination and park use, and perceived benefits of parks and park use. The relationship is not as originally hypothesized in terms of its causality, but nonetheless the relationships between DIS and park use, and BEN and park

use are significant. As Figure 6 indicates, BEN is a significant cause of park use with a .49 effect. Perceived discrimination has a lesser (-.12), but still significant effect on recreation participation. There is a negative relationship between the perceived discrimination and park use, and a positive relationship between perceived benefits and park use. These correlations support the hypotheses that the relationship between perceived discrimination and park use is negative, and the correlation between perceived benefits and park use is positive.

Subcultural identity and socioeconomic status relationship. There is a significant relationship between the subcultural identity factor and socioeconomic status. The path model would support this hypothesis. The correlation between SID and SES is $(-.69 * .29) = -.20$. This finding offers support for the marginality and ethnicity theories. According to this model, they are spuriously related. From a substantive view, the relevance of this is that, in previous studies, they were often viewed as separate or dissimilar to warrant different studies or approaches. There is a strong relationship between the two, especially given the antecedent of acculturation as hypothesized by the researcher.

Acculturation/subcultural identity and acculturation/socioeconomic status. There is a significant negative relationship between ACC and SID, and there is a significant positive relationship between ACC and SES. The model clearly presents the highest direct (and negative) correlation between ACC and SID as -.69. ACC also has a strong positive relationship (.29) with SES. These hypotheses are supported and acculturation has a significant impact on socioeconomic status and subcultural identity.

Subcultural identity and perceived discrimination. There is a positive relationship between subcultural identity and perceived discrimination. The path model reveals a .43 correlation between SID and DIS. The hypothesis that subcultural identity positively influences perceived discrimination is supported.

Summary of Findings

This summary is organized in a fashion consistent with path analysis, whereby one discusses the individual links, and then provides an overall assessment. The researcher first discusses the individual constructs and the relationships among those constructs. This provides a comparison to results of other studies. After the constructs are discussed, the researcher provides a summary of the overall model, and discusses how to deconstruct the model to compare it to other studies.

Acculturation, perceived benefits, and perceived discrimination. Acculturation, as conceived in the model, reflects a preference by Puerto Ricans to maintain the use of Spanish as the primary mode of communication. The assumption is that this indicates a preference to maintain the heterogeneity of a Puerto Rican subculture within the U.S. supra culture. As such, it indicates the extent to which a Puerto Rican, as a member of an ethnic group, is assimilated into the mainstream. The indicators were similar to those used in Floyd, et al.'s (1993) study.

The current study supported Floyd, et al.'s idea that acculturation (cultural distance) plays a critical role in the relationship between one's subcultural identity (intergroup distance) and socioeconomic status (socioeconomic distance). Although the concepts

were operationalized differently, they nonetheless held true. Acculturation was found to be an important causal antecedent to several variables in the EPRP Model.

A major finding regarding acculturation was the strong direct effect on perception of park benefits (-.40) and perceived discrimination (-.19). Perceived discrimination was found to negatively affect public recreation, as expected. However, the direct relationship was not as robust as the other direct relationships. The path analysis revealed the relationship to be indirect.

Perceived benefits of the recreation environment have not been explicitly looked at in previous studies. Often times, it is assumed that there are perceptions of parks, but those perceptions are often not measured because it is a “given.” The model illustrates the importance of measuring perceived benefits because it is a mediating variable between three different causal processes. The negative relationship between acculturation and perceived discrimination supports a marriage between West’s (1989) discrimination theory and Floyd, et al.’s (1993) acculturation theory.

The measurement of values was initially incorporated in this study as suggested by Washburne (1978) and Hutchison (1987). It differed from Hutchison, in that Hutchison conceived of ethnicity/race as an antecedent to values, whereas, this study argues the opposite. Cortes, et al. (1994) specifically argued for language and value items in the formation of a unidimensional acculturation scale. This study did not support that argument. The value and language items, some of which were taken from Cortes, et al.’s study, did not pass the internal consistency test for unidimensionality. As such, items measuring values were left out of the analysis and not incorporated into the acculturation construct.

Socioeconomic status and subcultural identity. These two constructs reflect the marginality and ethnicity theories, respectively. The inclusion of both constructs is consistent with the recent literature’s embracement of both theories. Washburne (1978) mentioned that reasons for underparticipation were not simply due to SES, and forecasted declining utility for SES. While this study supports the notion that participation is not due solely to SES, the study does not support declining utility for SES.

This study supported the idea of an interaction effect between SES and SID, initially considered by Hutchison (1987). According to the model, the relationship between SES and SID is spurious. As hypothesized, and in support of Stamps and Stamps (1985) and Washburne, ethnicity was found to be a more important predictor than marginality. In addition, it was found that both SES and SID’s effect on using public parks was minimal compared to the effect of other factors in the model.

SID was operationalized a little differently than in Taylor’s (1992) study. She looked at ethnic expression of leisure activities and inferred SID from this. This study took a more subjective and direct approach and solicited information reflecting ethnic expression (see Table 3).

The SID measure was also more robust than West’s (1989) measure of subculture, and was similar to Floyd, et al.’s (1993) conception. West found no support for the relationship between subcultural identity and recreation in his study. This study did find support for the relationship, albeit a spurious one.

Socioeconomic status was measured using an adopted version of the Hollingshead Two-Factor Index of education and occupation which was used in Stamps and Stamps' (1985) study. This differed from Floyd, et al.'s study which only used education as an indicator of SES. Unlike Stamps and Stamps, this study did not collapse the sample into upper and lower classes, but instead maintained the two indicators as reflective of one construct.

Public recreation participation. Unlike previous studies that observed what people do at parks, or asked about which recreation activities were participated in, this study focused on frequency of visits to parks over a one year time period. Park visitation was used as a proxy for public recreation participation. The interest in this study was in park use as measured by visitation. The advantage of measuring park use in this manner is that one can procure users and non-users of the parks. Not all parks were used because they did not meet the internal consistency criterion for unidimensionality of the public recreation participation construct.

Conclusion and Discussion

The EPRP Model was submitted to stringent validity tests of internal consistency and parallelism. The constructs held and were used as summative variables in a path analysis where the model was then analyzed to estimate the parameters and test for the fit of the model.

The EPRP Model's initial conception in terms of direct or indirect causality was respecified after assessing path coefficients, errors, and confidence intervals. The result was a revised model (Figure 6) which was statistically consistent with the data, and substantively consistent with the theoretical underpinnings of this study.

The result of this section was the testing of what became a sound theoretical and statistical model: The Ethnicity and Public Recreation Participation Model. The next, and final section summarizes the major points of this report, discusses the deconstruction of the EPRP Model, and considers the implications for future studies.

The purpose of introducing the EPRP Model was to identify factors which were important in examining the relationship between ethnicity and recreation behavior. This was accomplished in one of two ways. The first approach was to create a theoretical model that underscored the relationships between the different factors as hypothesized in the literature regarding ethnicity/race and recreation.

The researcher identified six factors: (1) ethnicity (subcultural identity), (2) marginality (socioeconomic status), (3) acculturation, (4) perceived benefits of public recreation, (5) perceived discrimination, and (6) public recreation participation. Based on prior empirical studies, the six factors were assembled to provide the building blocks for the Ethnicity and Public Recreation Participation Model. This led to the second approach in which the factors were examined.

The theoretical model was subjected to a confirmatory factor analysis to validate the existence of the factors/constructs as measured by the items that made up each construct. Once validity was assessed, the model was then empirically subjected to a path analysis in order to estimate the parameters of the EPRP Model, and test the fit of the model by assessing whether or not the model was consistent with the data.

The researcher revised the model based on the path coefficient and error analysis and found that the revised model was not different, conceptually, from the initial model. As a result, this study provides a theoretically and empirically sound model to consider in reconceptualizing the relationships between ethnicity and marginality factors and their effect on public recreation participation.

Discussion

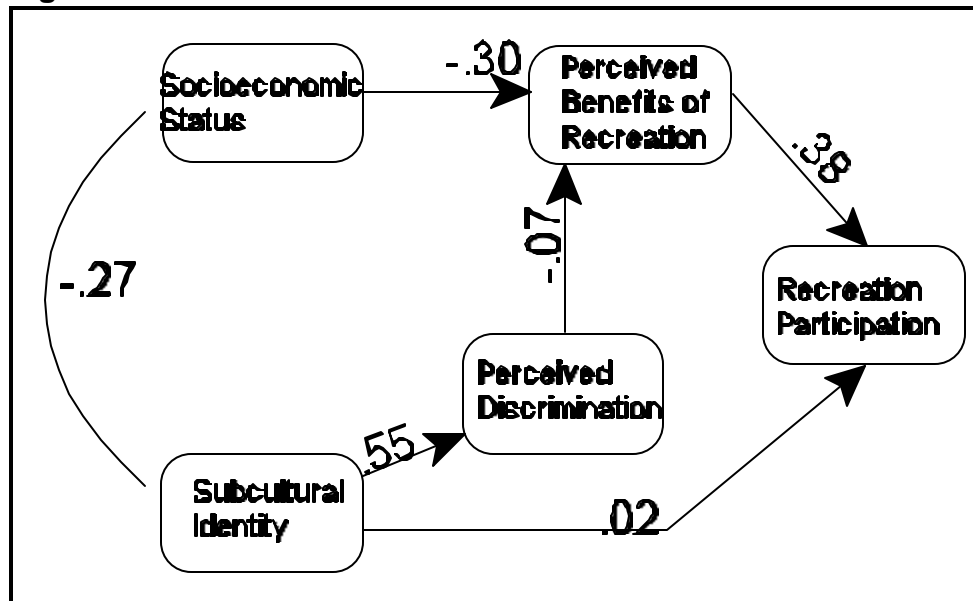
De-constructing the EPRP Model: Reflections of previous literature. The purpose of this section is to provide the reader with an in-depth look at the nuances of the EPRP Model. Because the model is reflective of causality, and it is statistically and substantively sound, all or parts of the model should provide points of comparison to other studies. The researcher de-constructed the model to illustrate, pedagogically, how the model reflects prior literature and reconceptualizes the relationships. One method of approaching this de-construction is to discern what would happen with the removal of one or several parts of the model.

The two key constructs are acculturation and perceived benefits. The former because it is a significant driving force in the model. The latter because it is both central to the model, and it is a “new” construct advocated for and introduced in this study. The removal of a construct does not change the correlation between the constructs, rather the changes occur in the path coefficients, i.e., in the nature of the direct relationships.

Removal of acculturation. The EPRP Model incorporates theories espoused specifically by Floyd, et al. (1993), Washburne (1978) and West (1985). These are acculturation, marginality and ethnicity, and discrimination, respectively. If one removes Floyd, et al.’s contribution, the acculturation construct as a direct driving force is extracted.

The resulting path model is exhibited in Figure 7. The curved arrow indicates that SID and SES are spuriously related, but that one does not hypothesize a common antecedent. If one compares Figure 7 with Figure 6, one sees that the path coefficients have changed.

Figure 7. The EPRP Model without Acculturation



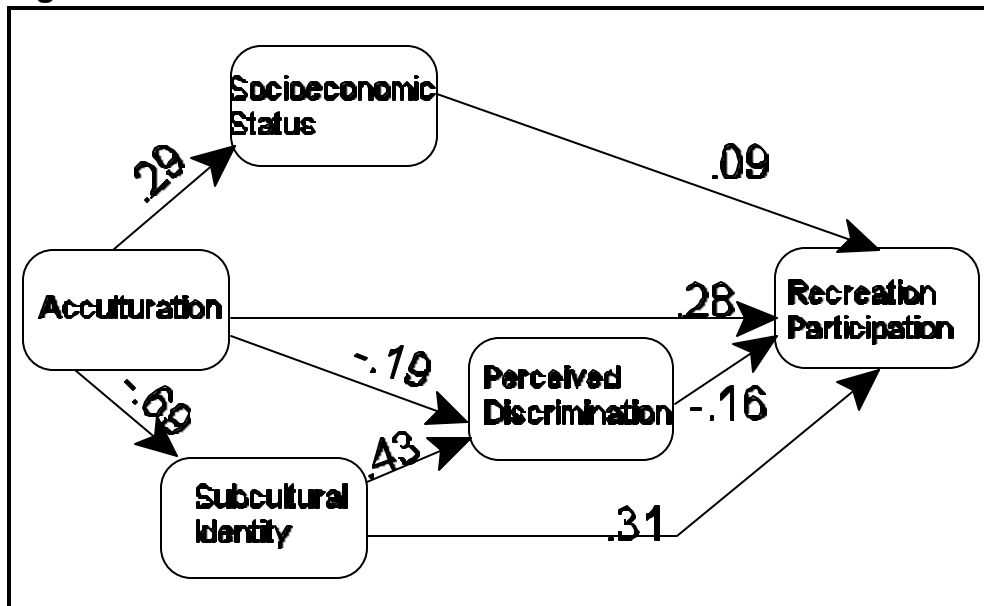
In causal modeling, if any variable is thrown out of a model, it reduces to a simpler model. The implication of this is that if the larger model fits, then the resulting simple model or causal strings will also fit.

Acculturation as a driving force behind DIS and SID increases the effect that each of those constructs have on BEN and REC, respectively. The inclusion of ACC in the model has the effect of lessening the effect SID and SES will have on other variables (and themselves). A general rule of causal analysis is that correlations are going to be progressively smaller as variables are farther away from each other in the causal string.

The implication of this is that without consideration of ACC as the driving force behind DIS and SID, the effect of DIS on BEN decreases to a coefficient of $-.07$ (versus $-.25$ with ACC in the model). Unlike, the final EPRP Model, the model without acculturation (Figure 7) would show a stronger direct link between DIS and REC ($-.10$) than between DIS and BEN.

Removal of perceived benefits. Figure 8 reflects the combined concepts of Washburne (1978), West (1989) and Floyd, et al. (1994). The following is a comparison between the path coefficients in the full EPRP Model versus the model without BEN in it:

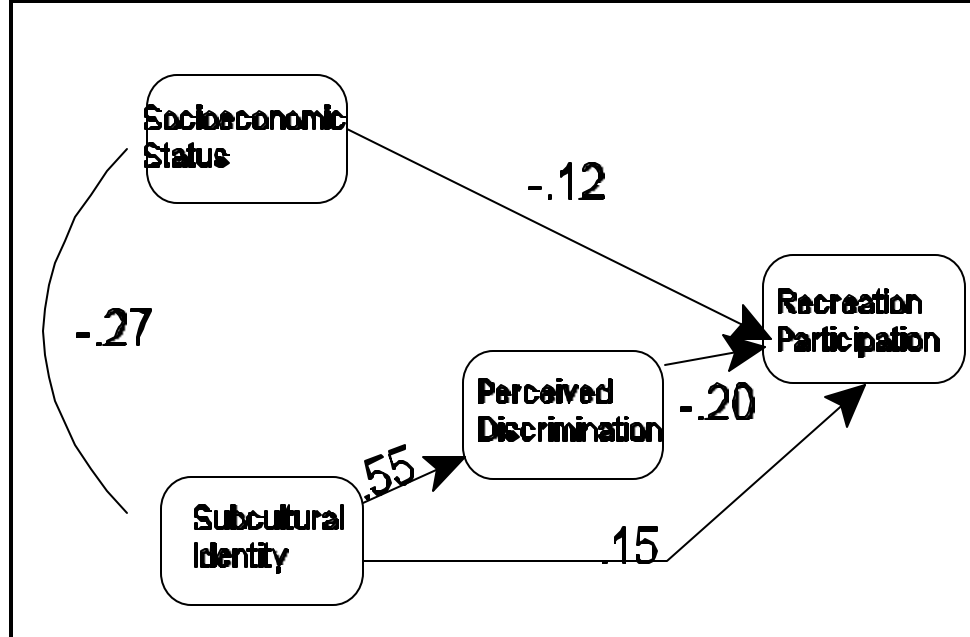
<u>Causal Path</u>	<u>Model with BEN</u>	<u>Model without BEN</u>
ACC/SID	-.69	-.69
ACC/SES	.29	.29
ACC/DIS	-.19	-.19
ACC/REC	.50	.28
SID/REC	.34	.31
DIS/REC	----	-.16

Figure 8. The EPRP Model without Perceived Recreation Benefits

The comparison of the path coefficients is instructive for several reasons. First, one can see that paths that were not affected by BEN were unchanged, as the model should predict. Second, because the direct relationship between ACC and BEN was eliminated (-.40), it attenuated the relationship between ACC and REC. Third, because BEN is not in the model, the relationship between DIS/REC is direct and it changes the relationship between SID/REC slightly. Related to this, the relationship between DIS/REC and SES/REC were not defined as direct in the EPRP Model, but they are when the BEN mediator is removed in order to be consistent with causality. Lastly, this is the first model that presents a positive correlation between SES/REC. All prior models have shown the relationship to be negative.

Removal of acculturation and perceived benefits. If ACC and BEN were removed from the model, the result would be a model reflecting the three underlying theories of marginality, ethnicity, and discrimination (see Figure 9). It comes closest to Stamps and Stamps' (1985) conception, and unites it with West's (1989) conception. This is the "basic" model as conceived today by most of the researchers studying ethnicity and recreation.

Figure 9. The EPRP Model without ACC and BEN



The importance of the role of discrimination is noted if ACC and BEN are not accounted for. The strong negative path coefficient (-.20) is the strongest it has been in any of the models. This affirms West's claim that discrimination is a valid construct when looking at ethnicity and recreation. Without ACC driving the model, or perceived benefits mediating relationships, the relative impacts of SES and SID on REC are about the same. This provides insight into why studies have been ambiguous in the past as to which of the two is the stronger predictor of recreation participation. The coefficient of .8 between SID/REC does not support the notion that minorities are under-represented in public parks because of ethnicity. This relationship is mediated by other factors as was illustrated in the previous models. The result of this deconstruction is that perceived benefits and acculturation are both important constructs to look at when considering ethnicity and recreation. Through causal modeling, the relative impacts of the inclusion or removal of a construct can be seen and compared.

Conclusion

Based on the findings, and within the limitations of this study, the researcher felt that this study answered the call from Floyd (1998) and Henderson (1998) for a more integrative approach, and more complex measurement of the relationships between ethnicity and recreation. The more complex measurement came in the form of identifying critical dimensions from the literature and empirically testing these dimensions through confirmatory and path analytic approaches. This study found the relationships in the model to be consistent with those hypothesized by the literature, although the nature of the relationships are reconceptualized.

From a conceptual standpoint, subcultural identity and acculturation were reconceptualized: the former in terms of how it is operationalized, the latter in terms of how it related to other variables. Subcultural identity was reconceptualized as a subjective response to the extent to which one identifies with a subcultural group. This is different from previous studies that simply ask or denote (in observational studies) whether one is Black, Caucasian, or Hispanic, and is consistent with Washburne's (1978) initial conception. Acculturation was reconceptualized as a precursor to the entire model. In previous studies it was conceptualized as occurring simultaneously with socioeconomic status or subcultural identity.

The EPRP Model answers the first research question regarding which of the two factors (ethnicity or marginality) was the better predictor of recreation behavior. In terms of their direct effect, ethnicity has a more profound effect. The second research question considered the individual and combined importance of ethnicity and marginality factors. The combined effect, as measured by the SES and SID constructs, was found to be significant (see findings). The last research question considered the relationship between acculturation, perceived discrimination, and perceived benefits. Initially, it was thought that the relationship was indirect via subcultural identity and socioeconomic status, respectively. The path analysis of the EPRP Model, however, supported the idea that there were considerable direct effects from acculturation to both perceived benefits and perceived discrimination.

The EPRP Model not only determined the relative influence of the factors in the model, but also offered a "snap shot" of the relationships between the most prominent theories regarding ethnicity and recreation. As a result, the EPRP Model contributes to the literature by offering a model for practitioners and researchers to consider. The model is not exhaustive of, but rather, instructive of possible factors influencing ethnic participation in public recreation settings.

Shortcomings and Limitations

There are some shortcomings and limitations with respect to the model. From a procedural standpoint, the study had to alter the original use of the SES scale. Because individual income was not used, the household income was not appropriate to use where education and occupation were individual measures.

Related to REC is the perceived recreation benefits construct. BEN measures whether respondents perceive that, in general, they have benefits versus what specifically those benefits are. As such, the BEN construct as a measure was intended to be a measure of overall perceptions, versus individual motivations for visiting a park.

The acculturation construct presents another limitation. ACC appeared to be very central to the causality of the model. This may have been due to the population under study. Puerto Ricans, in general, have a particular historical relationship with the United States that is beyond the scope of this study. Southbridge Puerto Ricans, in particular, have a very strong tie to Puerto Rico. This may influence the acculturation process.

Lastly, the study population is from a specific ethnic group. Although a Latino group, these findings should not be generalized to all Latinos. The findings should also not

be generalized to other ethnic group members. Some of the items which reflect the constructs are specific to Puerto Ricans. Acculturation, subcultural identity, and discrimination measures should reflect the specific ethnic group under study.

Implications

Conceptual implications. From a conceptual standpoint, the model synthesizes past research and looks at the relationship between the different factors. Marginality and ethnicity theories as explanations are insufficient, and do not operate in a vacuum. They are affected by each other and other factors in direct, indirect and spurious ways. The challenge is to try and make sense out of what these relationships really mean.

This model also helps to fill a void in theory-building approaches to studying ethnicity and recreation constructs. In particular, the EPRP Model introduces the perceived benefits of park use/recreation as a major factor intervening or mediating the relationships between SES, ACC, and SID on recreation participation. This incorporates leisure theory into the model, a theory which had not been directly incorporated in prior studies.

This study looks at affective or behavioral traits, rather than objective manifestations. In addition, the perspective or point of reference is from the actual ethnic group, and therefore the norm is the Puerto Rican norm. In previous studies, subcultural group members are often compared to whites. This assumes a normative structure based on white's recreation. If one is to truly understand the nature of ethnicity with respect to recreation, one should study ethnic groups without using Whites as a standard. The comparison to Whites or other subcultural groups brings in the pedagogical issue of race versus ethnicity. This study circumvented the issue by not considering it at all. As stated earlier, the issue is one of perspective.

Practical implications for the field. The last conceptual implication relates to a practical one. This study illustrates that Puerto Ricans do use parks. Some more heavily than others. To continue to view ethnic group members as being "under-represented" in a recreation site is to assume a normative order based on Whites. From a demographic standpoint, when the minority populations become the majority, this will no longer be an adequate point of reference.

The model shows that asking minorities about how they perceive the resource is important to understanding why they visit a recreation site. This is a better approach than observing that there are not as many Blacks as Whites visiting the park. If one understands the perceptions or motivations behind the visit, one could better cater the product to the user. This is implicit in most studies, but it should be made more explicit.

The understanding that acculturation is a significant driving force has several ramifications for practitioners. It indicates that the sense of belonging one has to American society impacts public recreation. If one does not feel accepted in the United States, one is not likely to participate in public places, regardless of subcultural identity. One can have a strong subcultural identity, but if one feels he/she belongs, one will still participate in the public sphere. The implication of this is that parks should be promoted as cultural centers, and recreation programs need to be more inclusive. It is worthwhile to

emphasize the importance of understanding the different leisure patterns and needs of various ethnic groups.

If acculturation does indeed drive several of the other factors influencing public participation in recreation areas, practitioners need to take the time to know more about the background of subcultural groups using the resource. In Southbridge, for example, a majority of the respondents preferred the survey in Spanish and/or preferred to speak Spanish. This knowledge should be incorporated into the management of the resource. For example, if there are rules which regulate use of the parks, and the majority of ones users are non-English speakers, then managers need to ensure that the signage is bilingual. Cultural nuances are important to keep in mind when trying to enforce policies.

Because acculturation affects ones perception of discrimination, managers can do one of two things. Managers and employees can be more sensitive to this issue. By acknowledging that there is already sufficient discrimination outside of the park, recreation managers and staff should work harder to provide a welcoming atmosphere, with no tolerance for discriminatory practices. Related to this, managers should hire a diverse group of employees who are members of various ethnic groups and who can “speak their language.”

Policies today need to reflect the users of tomorrow. A more proactive, assertive stance on reaching out to minority groups is recommended. In the case of the Latino population, studies show that they are very brand loyal (Wagner & Soberon-Ferrer, 1990). Starting a loyal following, based on cultural understanding today, will ensure visitation in the more pluralistic environment of the future.

For example, Henry Street Park was visited more than any other park in this study. Administrators of the park realized that the majority of the users were Puerto Rican, and that the majority spoke Spanish. Nearly a decade ago, tennis courts were changed to reflect the pattern of use of the Puerto Ricans who preferred to play basketball instead of tennis, and signage is bilingual. These small but significant changes did not go unnoticed by the Puerto Rican population. Over the years, Henry Street Park has hosted several Puerto Rican festivals. As a result, perceptions of discrimination were lessened and the perception of the park changed, thereby leading to more use.

As a recreation professional in a public service agency, exploration of reasons for why people do not visit a recreation area are sought. Often times, because the area is public, and the economic impact is minimal, minorities in the public sector constituency are overlooked. A needs assessment should go beyond recreation needs, and incorporate the cultural needs of the community.

REFERENCES

- Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two step approach. Psychological Bulletin, 103 (3), pp. 411-423.
- Allison, M. T. (1988). Breaking boundaries and barriers: Future directions in cross-cultural research. Journal of Leisure Research, 10, pp. 247-259.
- Baldwin, J. A., & Bell, Y. R. (1985). The African self-consciousness scale: An afri-centric personality questionnaire. The Western Journal of Black Studies, 9 (2), pp. 61-68.
- Baron, R.B., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. Journal of Personality and Social Psychology, 51 (6), pp. 1173-1182.
- Barona, A., & Miller, J. A. (1994). Short acculturation scale for Hispanic youth (SASH-Y): A preliminary report. Hispanic Journal of Behavioral Sciences, 16 (2), pp. 155-162.
- Burch, W. R., Jr. (1969). The social circles of leisure: Competing explanations. Journal of Leisure Research, 1, pp. 125-147.
- Burlew, A. K., & Smith, L. R. (1991). Measures of racial identity: An overview and a proposed framework. The Journal of Black Psychology, 17 (2), pp. 53-71.
- Brown, R.E. (1982). The new New Englanders. Worcester, MA: Commonwealth Press.
- Carr, D. S., & Williams, D. R. (1993a). Understanding diverse recreationists: Beyond quantitative analysis. In P. H. Gobster (Ed.), Managing urban and high-use recreation settings (pp. 101-106). Chicago, IL: USDA Forest Service North Central Forest Experiment Station.
- Carr, D. S., & Williams, D. R. (1993b). Understanding the role of ethnicity in outdoor recreation experiences. Journal of Leisure Research, 25 (1), pp. 22-38.
- Chavez, D. J. (1993). Visitor perceptions of crowding and discrimination at two national forests in Southern California (Research Paper PSW-RP-216). Albany, CA: USDA Forest Service Pacific Southwest Research Station.
- Christensen, J. E., & Dwyer, J. F. (1994, April 10-12). Examining African American and White outdoor recreation participation after demographic standardization on selected characteristics. In G. A. Vander Stoep (Ed.), Proceedings of the 1994 Northeastern Recreation Symposium (pp. 159-161). Sarasota Springs, NY: USDA Forest Service, Northeastern Forest Experiment Station.
- Craig, W. (1972). Recreational activity patterns in a small Negro urban community: The role of the cultural base. Economic Geography, 48, pp. 107-115.
- Cortés, D. E., Rogler, L.H., & Malgady, R. G. (1994). Biculturality among Puerto Rican adults in the United States. American Journal of Community Psychology, 22 (5), pp. 707-721.

- Cox, T., Jr. (1990). Problems with research by organizational scholars on issues of race and ethnicity. The Journal of Applied Behavioral Science, 26, pp. 5-23.
- Datz, B. (1998, December 13). Jobs fueled migration: Industrial Southbridge drew Puerto Ricans. Sunday Telegram, p. A23.
- Davis, J. A. (1985). The logic of causal order. Newbury Park, CA: SAGE Publications, Inc.
- Dillman, D. A. (1978). Mail and telephone surveys: The total design method. New York, NY: John Wiley & Sons.
- Duncan, O.D. (1975). Introduction to structural equation models. New York, NY: Academic Press.
- Dwyer, J. F. (1993, April 18-20). Customer diversity and the future demand for outdoor recreation. In G. A. Vander Stoep (Ed.), Proceedings of the 1993 Northeastern Recreation Symposium (pp. 59-63). Sarasota Springs, NY: USDA Forest Service, Northeastern Forest Experiment Station.
- Dwyer, J. F. (1994, August). Customer diversity and the future demand for outdoor recreation (General Technical Report RM-252). Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station.
- Dwyer, J. F., & Gobster, P. H. (1992). Recreation opportunity and cultural diversity. Park & Recreation, 27 (9), pp. 22-33, 128.
- Echegaray, C. (1998, December 13). Commonwealth or State?: Island's vote divides Puerto Ricans in Worcester County. Sunday Telegram, pp. A1, A22.
- Edwards-Hewitt, T., & Gray, J. J. (1995). Comparison of measures of socioeconomic status between ethnic groups. Psychological Reports, 77, pp. 699-702.
- Falk, J. H. (1995). Factors influencing African American leisure time utilization of museums. Journal of Leisure Research, 27 (1), pp. 41- 60.
- Feagin, J. R. (1994). The continuing significance of race: Antiracist discrimination in public places. American Sociological Review, 56, pp. 101-116.
- Floyd, M. F. (1998). Getting beyond marginality and ethnicity: The challenge for race and ethnic studies in leisure research. Journal of Leisure Research, 30 (1), pp. 3-22.
- Floyd, M. F., Gramman, J. H., & Saenz, R. (1993). Ethnic factors and the use of public outdoor recreation areas: The case of Mexican Americans. Leisure Sciences, 15, pp. 83-98.
- Floyd, M. F., McGuire, F. A., Shinew, K. J., & Noe, F. P. (1994). Race, class, and leisure activity preferences: Marginality and ethnicity revisited. Journal of Leisure Research, 26 (2), pp. 158-173.
- Frazier, E. F. (1957). The black bourgeoisie. Glencoe, IL: Free Press.
- Gomez, Edwin. (1999). *Ethnicity and recreation: Problems with concepts and a need for new approaches*. In Proceedings of the 1999 Northeast Recreation Research Symposium. USDA Forest Service, Northeast Forest Experiment Station.
- Gordon, M. M. (1964). Assimilation in American life. New York, NY: Oxford University Press.

- Gramman, J. H. (1996). Ethnicity, race, and outdoor recreation: A review of trends, policy, and research (Miscellaneous Paper R-96-1). Vicksburg, MS: Army Corps of Engineers, Waterways Experiment Station.
- Heise, D.R. (1975). Causal analysis. New York, NY: Wiley.
- Hendee, J. C. (1969). Rural-urban differences related in Outdoor recreation participation. The Journal of Leisure Research, 1 (4), pp. 333-341.
- Henderson, K. A. (1998). Researching diverse populations. Journal of Leisure Research, 30 (1), pp. 157-170.
- Hunter, J.E., & Gerbing, D.W. (1982). Unidimensional measurement, second order factor analysis, and causal models. Research in Organizational Behavior, 4, pp. 267-320.
- Hutchinson, R. (1988). A critique of race, ethnicity, and social class in recent leisure-recreation research. Journal of Leisure Research, 20 (1), pp. 10-30.
- Hutchison, R. (1987). Ethnicity and urban recreation: Whites, Blacks, and Hispanics in Chicago's public parks. Journal of Leisure Research, 19 (3), pp. 205-222.
- Iso-Ahola, S. E. (1980). The social psychology of leisure and recreation. Dubuque, IA: William C. Brown.
- Jackson, R. G. (1973). A preliminary bicultural study of value orientations and leisure attitudes. Journal of Leisure Research, 5 (1), pp. 10-22.
- James, L.R., & Brett, J.M. (1984). Mediators, moderators, and tests for mediation. Journal of Applied Psychology, 69 (2), pp. 307-321.
- Johnson, C. Y., Bowker, J. M., English, D. B. K., & Worthen, D. (1997). Theoretical perspectives of ethnicity and outdoor recreation: A review and synthesis of African-American participation (General Technical Report SRS-11). Asheville, NC: USDA Forest Service, Southern Research Station.
- Johnson, C. Y., Bowker, J. M., English, D. B. K., & Worthen, D. (1998). Wildland recreation in the rural South: An examination of marginality and ethnicity theory. Journal of Leisure Research, 30 (1), pp. 101-120.
- Kelly, J. R. (1980). Outdoor recreation participation: A comparative analysis. Leisure Sciences, 3 (2), pp. 129-154.
- Kenny, D.A. (1979). Correlation and causality. New York, NY: Wiley.
- Kline, P. (1994). An easy guide to factor analysis. New York, NY: Routledge.
- Kline, R.B. (1998). Principles and practice of structural equation modeling. New York, NY: Guilford.
- Klobus-Edwards, P. (1981). Race, residence, and leisure style: Some policy implications. Leisure Sciences, 4 (2), pp. 95-111.
- Lindsay, J. J., & Ogle, R. A. (1972). Socioeconomic patterns of outdoor recreation use near urban areas. Journal of Leisure Research, 4 (2), pp. 19-24.
- Loehlin, J.C. (1987). Latent variable models. Hillsdale, CA: Erlbaum.
- Massey, D.S., & Denton, N. A. (1993). American apartheid: Segregation and the making of the underclass. Cambridge, MA: Harvard University Press.
- McKee, J. B. (1993). Sociology and the race problem: The failure of a perspective. Urbana, IL: University of Illinois Press.

- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. Journal of Community Psychology, 14, pp. 6-23.
- McMillan, J. B. (1983). The social organization of leisure among Mexican-Americans. Journal of Leisure Research, 15 (2), pp. 164-173.
- Meeker, J. W., Woods, W. K., & Lucas, W. (1973, Fall). Red, white, and black in the national parks. North American Review, pp. 3-7.
- Murdock, S. H., Backman, K., Colberg, E., Hoque, MD. N., & Hamm, R. R. (1990). Modeling demographic change and characteristics in the analysis of future demand for leisure services. Leisure Services, 12, pp. 79-120.
- Murdock, S. H., Backman, K., Hoque, MD. N., & Ellis, D. (1991). The implications of change in population size and composition of future participation in outdoor recreation activities. Journal of Leisure Research, 23 (3), pp. 238-259.
- Myrdal, G. (1944). An American dilemma. New York, NY: Harper and Brothers.
- Neulinger, J. (1981). The psychology of leisure (2nd ed.). Springfield, IL: Charles C. Thomas, Publisher.
- Phillip, S. F. (1994). Race and tourism choice: A legacy of discrimination? Annals of Tourism Research, 21 (3), pp. 479-488.
- Phillip, S. F. (1997). Race, gender, and leisure benefits. Leisure Science, 19, pp. 191-207.
- Puerto Ricans say 'no' to statehood. (1998, December 14). Southbridge Evening News, p. 13.
- Rabinowitz, J. (1998, December 15). Southbridge residents respond to Puerto Rican vote. Southbridge Evening News, pp. 1, 16.
- Resnicow, K., & Ross-Gaddy, D. (1997). Development of a racial identity scale for low-income African Americans. Journal of Black Studies, 28 (2), pp. 239-254.
- Rodríguez, C. E. (1996). Puerto Ricans: Between Black and White. In C. E. Rodríguez, & V. Sánchez Korrol (Eds.), Historical perspectives on Puerto Rican survival in the United States (pp. 25-35). Princeton, NJ: Markus Weiner Publishers.
- Salant, P., & Dillman, D. A. (1994). How to conduct your own survey. New York, NY: John Wiley and Sons, Inc.
- Saldaña, D. H. (1994). Acculturative stress: Minority status and distress. Hispanic Journal of Behavioral Sciences, 16 (2), pp. 116-128.
- Sanchez, J. I., & Brock, P. (1996). Outcomes of perceived discrimination among Hispanic employees: Is diversity management a luxury or a necessity? Academy of Management Journal, 39 (3), pp. 704-719.
- Schumen, H., & Gruenberg, B. (1972). Dissatisfaction with city services: Is race an important factor? In Harlan, H. (Ed.), People and politics in urban society (pp. 369-392). Beverly Hills, CA: Sage Publications, Inc.
- Shaull, S. L., & Gramman, J. H. (1998). The effect of cultural assimilation on the importance of family-related and nature-related recreation among Hispanic Americans. Journal of Leisure Research, 30 (1), pp. 47-63.
- Shavelson, R. J. (1992). Statistical reasoning for the behavioral sciences (3rd ed.). Needham Heights, MA: Allyn & Bacon (A Simon & Schuster Company).

- Shinew, K. J. (1995). Gender, race, and subjective social class and their association with leisure preferences. Leisure Sciences, 17, pp. 75-89.
- Singh, B. (1981). Race, ethnicity and class: Clarifying relationships and continuous muddling through. Journal of Ethnic Studies, 9 (2), pp. 1-19.
- Stamps, S. M., & Stamps, M. B. (1985). Race, class and leisure activities of urban residents. Journal of Leisure Research, 17 (1), pp. 40-56.
- Stodolska, M., & Jackson, E. L. (1998). Discrimination in leisure and work experienced by a white ethnic minority group. Journal of Leisure Research, 30 (1), pp. 23-46.
- Stokes, J. E., Murray, C. B., Peacock, M. J., & Kaiser, R. T. (1994). Assessing the reliability, factor structure, and validity of the African Self-Consciousness Scale in a general population of African Americans. Journal of Black Psychology, 20 (1), pp. 62-74.
- Sugrue, T. J. (1996). The Origins of the urban crisis: Race and inequality in postwar Detroit. Princeton, NJ: Princeton University Press.
- Tanaka, J.S. (1987). "How big is big enough?": Sample size and goodness of fit in structural equation models with latent variables. Child Development, 58, pp. 134-146.
- Taylor, D. E. (1992). Urban park use: Race, ancestry, and gender. In P. H. Gobster (Ed.), Managing urban and high-use recreation settings (pp. 82-86). Chicago, IL: USDA Forest Service North Central Forest Experiment Station.
- Toth, J. F., Jr., & Brown, R. B. (1997). Racial and gender meanings of why people participate in recreational fishing. Leisure Sciences, 19, pp. 129-146.
- Tyson, R.C., & Bailey, D.E. (1970). Cluster Analysis. New York, NY: McGraw-Hill.
- Wagner, J., & Soberon-Ferrer, H. (1990). The effect of ethnicity on selected household expenditures. The Social Science Journal, 27 (2), pp. 181-198.
- Washburne, R. F. (1978). Black under-participation in wildland recreation: Alternative explanations. Leisure Sciences, 1 (2), pp. 175-189.
- Watson, M. A. (1992). Researching minorities. Journal of the Market Research Society, 34 (4), pp. 337-344.
- West, C. S. (1994). Afro-centricity: Moving outside of the comfort zone. Journal of Physical Education, Recreation, and Dance, 65 (5), pp. 28-30.
- West, P. C. (1989). Urban region parks and Black minorities: Subculture, marginality, and interracial relations in park use in the Detroit metropolitan area. Leisure Sciences, 11, pp. 11-28.
- Wilson, W. J. (1996). When work disappears: The world of the new urban poor. New York, NY: Alfred A. Knopf, Inc.
- Winter, P. L. & Chavez, D. J. (1998, May 29). Conducting research in the Hispanic community. [Handout]. Paper presented at The 7th International Symposium on Society and Resource Management, Columbia, MO.
- Witt, P. A., & Ellis, G.D. (1989). The leisure diagnostic battery: Users Manual. State College, PA: Venture Publishing, Inc.
- Woodard, M. D. (1988). Class, regionality, and leisure among urban Black Americans: The post-civil rights era. Journal of Leisure Research, 20 (2), pp. 87-105.

Xie, Y., & Goyette, K. (1997). The racial identification of biracial children with one Asian parent: Evidence from the 1990 Census. Social Forces, 76 (2), pp. 547-570.

Young, J.W. (1977). The function of theory in a dilemma of path analysis. Journal of Applied Psychology, 62, , pp. 108-110.